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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,595	FAVALORA ET AL.	
	Examiner	Art Unit	
	Jason M. Repko	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 26-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22 and 26-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 1-22 is withdrawn in view of the newly discovered reference(s) to U.S. Patent Application Publication No. 2002/0158865 to Dye et al, U.S. Patent No. 6,753,847 to Kurtenbach et al, U.S. Patent No. 6,188,390 to Selker et al U.S, Patent No. 6,152,821 to Nakagawa et al, U.S. Patent No. 5,717,869 to Moran et al, and U.S. Patent No. 6,826,282 to Pachet et al. Rejections based on the newly cited reference(s) follow.

Response to Arguments

2. Applicant's arguments with respect to claims 26-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claim 26 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent Application Publication 2002/0154214 to Scallie et al (herein referred to as "Scallie et al.")**

5. With regard to claim 26, Scallie et al discloses "a volume manager in communication with an application program interface layer, said volume manager managing three-dimensional regions within a three-dimensional spatial display and allocating at least one three-dimensional one three-dimensional regions within a three-dimensional spatial display and allocating at least

one three-dimensional region to display graphical information from at least one application in communication with said application program interface layer" (*paragraph 40: "Thus, the Pseudo Drivers can produce a 3D display from conventional 3D game software without requiring access to or modification of the game source code."*). Scallie et al discloses in Fig. 1A a pseudo driver system that is in communication with the API using a "function call intercept."

6. Scallie et al discloses "said volume manager accesses a preferred viewer position and controls orientation of graphical information within one of said regions in response to said preferred viewer position" (*paragraph 67: "The HMDs allow for head tracking in real-time inside a game environment with 3 degrees of freedom (looking up\down, left\right and tilting) without access to the game source code."; paragraph 41: "3D display technology has developed to offer very high resolution and wide field of view. When used with a head mounted display unit (HMD) which allows direct head tracking, VR systems can offer a very immersive virtual reality experience for the player."*).

7. Scallie et al does not use the explicit language "sensor"; however, one of ordinary skill in the art would recognize that a head tracker is a sensor, which is further evidenced by the statement in paragraph 68: "Use of HMDs frees up the player's hands to control a weapon or other type of action device." Scallie et al does not use the explicit language "preferred viewer position is specified by a user"; however, one of ordinary skill in the art would recognize that a head tracker detects user specified movement from the paragraph 67: "The HMDs allow for head tracking in real-time inside a game environment with 3 degrees of freedom (looking up\down, left\right and tilting) without access to the game source code," where the user looks up\down, left\right and tilts, which specifies a viewing position.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-11 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0158865 to Dye et al (herein referred to as "Dye et al") in view of U.S. Patent No. 6,753,847 to Kurtenbach et al (herein referred to as "Kurtenbach et al.")

11. With regard to claim 1, Dye et al discloses "a system for displaying graphical information in three dimensions, the system comprising:

a. a host device executing an application for generating graphical information in a spatial transport protocol (*paragraph 87: "The CPU 102 begins program execution by reading the recently decompressed program code from the system memory 110. Portions of the program code contain information necessary to write data and/or instructions back*

to the IMC 140 using a special graphical protocol to direct the IMC 140 to control the display output on the video display 142.");

b. rendering hardware for generating three-dimensional display data (*paragraph 23: "The IMC first operates to construct a 3-D Virtual display refresh list (3D-VDRL) in system memory. The IMC then executes the 3-D VDRL by reading the VDRL and generating and/or accessing the appropriate pixel data from system memory to construct an image or display objects."*);

c. frame buffer for storing said three-dimensional display data (*paragraph 21: "The IMC uses techniques to improve overall system performance and user response time by use of the main system memory as a virtual graphical frame buffer and program/data storage."*);

d. and a spatial transport protocol interpreter receiving said graphical information in said spatial transport protocol and controlling operation of said rendering hardware and said frame buffer in response to said graphical information in said spatial transport protocol (*paragraph 87: "Portions of the program code contain information necessary to write data and/or instructions back to the IMC 140 using a special graphical protocol to direct the IMC 140 to control the display output on the video display 142."; paragraph 149: "During execution of the 3D VDRL, such as in step 304, triangle attributes are preferably read from system memory under address control of the 3D-VDRL engine (controlled by the 3D-VDRL protocol) into the 2D/3D/Video graphics engine."; paragraph 152: "The execution engine continually builds new VDRL data for interpretation and control by the video refresh engine(s)."*).

12. Dye et al does not disclose "a spatial display for displaying said three-dimensional display data." Kurtenbach et al discloses "a spatial display for displaying three-dimensional display data" (*Fig. 1 shows a volumetric display*).

13. Dye et al and Kurtenbach et al are analogous art because they are from the same field of endeavor: computer graphics. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a spatial display disclosed by Kurtenbach et al in the rendering system which uses a graphical transport protocol disclosed by Dye et al in a manner as shown by Kurtenbach et al in Fig. 15. The motivation for doing so would have been to "allow a user to view different parts of a true 3D scene" as stated by Kurtenbach et al in lines 53 and 54 of column 1. Therefore, it would have been obvious to combine Dye et al with Kurtenbach et al to obtain the invention specified in claim 1.

14. With regard to claim 2, Dye et al further discloses "said rendering hardware, said frame buffer and said spatial transport protocol interpreter are incorporated within said spatial display" (*paragraph 55: " The IMC of the present invention may be comprised in the television system unit 53 and/or may be comprised in the set top box 57. In other words, the IMC may be comprised in the set top box 57, or the IMC of the present invention may be integrated into the television, wherein the set top box 57 is optionally not included. "*).

15. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to further modify the combination of Dye et al and Kurtenbach et al to include the spatial transport protocol interpreter and the frame buffer in the spatial display as further taught by Dye et al. The motivation for doing so would have been to consolidate the system. Therefore, it

would have been obvious to further modify Dye et al and Kurtenbach et al to obtain the invention specified in claim 2.

16. Claim 30 is rejected with the rationale of claim 2, as claim 30 recitation of "split between" is similar in scope that of claim 2.

17. Claim 3 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "host device is coupled to said spatial display by a bus" (*Figure 2B shows how the IMC is connected to the display; paragraph 21: "...for media output data (audio, video, telephony) the host CPU or DMA master is not limited by external available proprietary bus bandwidth, thus improving overall system throughput."; paragraph 22: " The memory controller (IMC) of the present invention may sit on the main CPU bus, (not limited to that bus) or a high-speed system peripheral bus such as the PCI or the accelerated graphics peripheral (AGP) bus";*).

18. Claim 4 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "said rendering hardware, said frame buffer and said spatial transport protocol interpreter are incorporated within said host device." Dye et al shows in Figure 3 the host system including the rendering hardware 140, and the main system memory, which comprises the frame buffer as shown in the rejection of claim 1. Figure 4 shows internal architecture of the IFC 140, which comprises the protocol interpreters as shown in the rejection of claim 1.

19. Claim 5 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "said rendering hardware generates a bitmap image" (*paragraph 23: " The IMC then executes the 3-D VDRL by reading the VDRL and generating and/or accessing the appropriate pixel data from system memory to construct an image or display objects."*).

20. With regard to claim 6, Dye et al discloses generating a bitmap image. Dye et al fails to teach generating a vector list. Official Notice is taken that both the concept and the advantages of using a vector list as an alternative to a bitmap image for displays are well known in the art. It would have been obvious to have included a vector list in the Dye and Kurtenbach et al system as vectors lists are known to provide a representation of graphical objects that are fully scalable without loss of resolution.

21. Claim 7 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "spatial transport protocol includes commands" (*paragraph 105: " The 3-D VDRL comprises a list of commands which are executable to render pixel data comprising one or more 3-D objects."*).

22. Claim 8 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "said commands include commands for operating said rendering hardware and said frame buffer" (*paragraph 106: "In step 304 the IMC then executes the 3-D VDRL by reading the VDRL and generating the appropriate pixel data to construct an image."*).

23. Claim 9 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "said commands include commands for synchronizing operation of said host device, said rendering hardware and said frame buffer" (*paragraph 106: "Execution of the 3-D VDRL operates to generate or render pixel data, which then may be stored in system memory for later use or may be rendered to the display in real time."*). As shown in the rejection of claim 1, Dye et al discloses that the system memory is used as the frame buffer.

24. Claim 10 is met by the combination of Dye et al and Kurtenbach et al, wherein Dye et al discloses "said commands include commands for controlling operation of said spatial display. "

(*paragraph 107: "In step 306 the IMC provides the pixel data generated in step 304 directly to the display device for display. For example, the pixel data generated in step 304 may be directly provided to a display buffer for immediate output to the display."*).

25. As for claim 11, Kurtenbach et al further discloses "a 3D pointer is rendered in said spatial display" (*line 67 of column 2 through line 5 of column 3: "In one configuration, as depicted in FIG. 2, the user's hand 30 is tracked via a glove or a set of cameras in a volume 32 directly below the display volume 34. A virtual representation of the hand 36, or some other type of position indicator, such as a cursor, is superimposed into the 3D output volumetric display 34."*).

26. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to further modify the combination of Kurtenbach et al and Dye et al to include a 3D pointer as further taught by Kurtenbach et al. The motivation for doing so would have been to allow the user to "interact with the scene or content within the volumetric display" as stated by Kurtenbach et al in lines 56-59 of column 2.

27. **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dye et al in view of Kurtenbach et al and in further view of U.S. Patent No. 6,188,390 to Selker et al (herein referred to as "Selker et al.")**

28. With regard to claim 12, The combination of Dye et al and Kurtenbach et al discloses a 3D pointer as shown in claim 11, but does not disclose a "tail." Selker et al discloses a 3D pointer is rendered as a glyph with a tail, a direction of said tail following a most recent movement of said 3D pointer (*lines 37-41 of column 1: "For example, it is possible to use a pointing device to change the speed of movement, the size, color, and direction of the displayed*

pointer, to select a specific displayed icon as the pointer, and whether or not the displayed pointer has a "tail" as it moves.").

29. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to further modify the 3D pointer Dye et al and Kurtenbach et al with a tail as disclosed by Selker et al. The motivation for doing so would have been to allow a user to follow the mouse cursor's path. Therefore, it would have been obvious to combine Selker et al with Dye et al and Kurtenbach et al to obtain the invention specified in claim 12.

30. **Claims 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dye et al in view of Kurtenbach et al and in further view of Scallie et al.**

31. With regard to claim 13, Dye et al discloses "an application layer including applications for generating visual object descriptions" (*paragraph 25: " The CPU 102 begins program execution by reading the recently decompressed program code from the system memory 110. Portions of the program code contain information necessary to write data and/or instructions back to the IMC 140 using a special graphical protocol to direct the IMC 140 to control the display output on the video display 142."*) "a spatial transport protocol layer for converting said graphical information into a spatial transport protocol and generating a stream of said graphical information in said spatial transport protocol" (*paragraph 25: " The IMC operates to construct the 3-D VDRL by first parsing the 3D object and generating independent vertex-sorted geometric primitives and then performing setup on the geometric primitives."*); and a display layer receiving said stream of graphical information in said spatial transport protocol and displaying three-dimensional display data on a display (*paragraph 87: "Portions of the program code contain information necessary to write data and/or instructions back to the IMC 140 using*

a special graphical protocol to direct the IMC 140 to control the display output on the video display 142." paragraph 149: "During execution of the 3D VDRL, such as in step 304, triangle attributes are preferably read from system memory under address control of the 3D-VDRL engine (controlled by the 3D-VDRL protocol) into the 2D/3D/Video graphics engine.";
paragraph 152: "The execution engine continually builds new VDRL data for interpretation and control by the video refresh engine(s).").

32. As previously shown, Dye et al does not expressly disclose a "spatial display." Kurtenbach et al discloses "displaying three-dimensional display data on a three dimensional display" (*Fig. 1 shows a volumetric display*).

33. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a spatial display disclosed by Kurtenbach et al to the rendering system disclosed by Dye et al in a manner as shown by Kurtenbach et al in Fig. 15. The motivation for doing so would have been to "allow a user to view different parts of a true 3D scene" as stated by Kurtenbach et al in lines 53 and 54 of column 1.

34. Dye et al discloses code to generate visual object descriptions (*paragraph 87: "The CPU 102 begins program execution by reading the recently decompressed program code from the system memory 110.*) The combination of Dye et al and Kurtenbach et al does not expressly disclose an application layer or an application program interface layer. Scallie et al discloses "an application layer including applications for generating visual object descriptions" (*Fig. 1A shows an 3D video game 10*), and "an application program interface layer receiving said visual object descriptions and generating graphical information" (*Fig 1A shows an application program interface layer (API) 20 for generating graphical information: R image and L image*).

35. Dye et al, Kurtenbach et al and Scallie et al are analogous art because they are from the same field of endeavor/similar problem solving area: computer graphics. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to further modify the combination of Dye et al and Kurtenbach et al by adding an application and an application program interface layers to the architecture to support computer graphics applications as taught by Scallie et al to the architecture disclosed by Dye et al and Kurtenbach et al. The motivation for doing so would have been to enable computer graphics applications to easily interface with the spatial display architecture, which is stated in paragraph 5 of Scallie et al: "It would therefore be very desirable to have a VR game system in which popular 3D video games written to be displayed on 2D display hardware can be operated to provide a 3D stereoscopic display without having to re-write the video game software for the 3D display hardware". Therefore, it would have been obvious to combine Dye et al and Kurtenbach et al with Scallie et al to obtain the invention specified in claim 13.

36. Claim 14 is met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Dye et al discloses the "application layer includes a native application generating graphical information in said spatial transport protocol" (*paragraph 87: "Portions of the program code contain information necessary to write data and/or instructions back to the IMC 140 using a special graphical protocol to direct the IMC 140 to control the display output on the video display 142."*).

37. Claims 15 and 16 are met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Scallie et al discloses the "application layer includes a legacy application generating graphical information that is converted to said spatial transport protocol by said spatial transport

protocol layer" and "application program interface layer interprets said visual object descriptions formatted in a first format" (*Fig. 1A; paragraph 22: " The existing (previously written) 3D video game software 10 is played by a Player and generates a stream of 3D visuals through a game engine that outputs 3D game data."; paragraph 23: "In the present invention (solid line arrows), the 3D game data output of the video game software 10 are intercepted and redirected to pseudo API drivers 20 which generate right (R) and left (L) stereoscopic image outputs to right and left stereoscopic display cards 22, 24 that generate the resulting 3D stereoscopic display on a 3D display device 26."*).

38. Claims 17 and 18 are met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Scallie et al discloses "first format is OpenGL" as in claim 17 and "first format is Direct3D" as in claim 18 shown in Figure 6 and in paragraph 59: " The system can accommodate most of the popular games that are written for OpenGL, DirectX 7, and/or DirectX 8. Pseudo OpenGL, DirectX 7, and DirectX 8 wrappers take the 3D game data output of any of the games and re-directs them to Dual Rendering links to real DirectX 8 rendering functions."

39. Claim 19 is met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Scallie et al discloses "a volume manger in communication with said application program interface layer, said volume manager managing three-dimensional regions within said spatial display and allocating at least one three-dimensional region to display graphical information from at least one of said applications" (*paragraph 40: "Thus, the Pseudo Drivers can produce a 3D display from conventional 3D game software without requiring access to or modification of the game source code."*) Scallie et al discloses in Fig. 1A a pseudo driver system that is in communication with the API using a "function call intercept."

40. Claim 20 is met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Scallie et al discloses "said volume manager accesses a preferred viewer position and controls orientation of graphical information within one of said regions in response to said preferred viewer position" (*paragraph 67: "The HMDs allow for head tracking in real-time inside a game environment with 3 degrees of freedom (looking up\down, left\right and tilting) without access to the game source code."; paragraph 41: "3D display technology has developed to offer very high resolution and wide field of view. When used with a head mounted display unit (HMD) which allows direct head tracking, VR systems can offer a very immersive virtual reality experience for the player."*).

41. Claims 21 and 22 are met by the combination of Dye et al, Kurtenbach et al and Scallie et al, wherein Scallie et al discloses a HMD as shown in claim 20. With regard to claim 21, Scallie et al does not use the explicit language "sensor"; however, one of ordinary skill in the art would recognize that a head tracker is a sensor, which is further evidenced by the statement in paragraph 68: "Use of HMDs frees up the player's hands to control a weapon or other type of action device." With regard to claim 22, Scallie et al does not use the explicit language "preferred viewer position is specified by a user"; however, one of ordinary skill in the art would recognize that a head tracker detects user specified movement from the paragraph 67: "The HMDs allow for head tracking in real-time inside a game environment with 3 degrees of freedom (looking up\down, left\right and tilting) without access to the game source code," where the user looks up\down, left\right and tilts, which specifies a viewing position.

42. **Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scallie et al in view of U.S. Patent No. 6,152,821 to Nakagawa et al (herein referred to as "Nakagawa et al.")**

43. With regard to claim 27, Scallie et al discloses "a volume manager in communication with an application program interface layer, said volume manager managing three-dimensional regions within a three-dimensional spatial display and allocating at least one three-dimensional one three-dimensional regions within a three-dimensional spatial display and allocating at least one three-dimensional region to display graphical information from at least one application in communication with said application program interface layer" (*paragraph 40: "Thus, the Pseudo Drivers can produce a 3D display from conventional 3D game software without requiring access to or modification of the game source code."*). Scallie et al discloses in Fig. 1A a pseudo driver system that is in communication with the API using a "function call intercept." Scallie et al does not expressly disclose "visual objects within said spatial display are distinguished from each other by displaying a platter beneath each visual object."

44. Nakagawa et al discloses "visual objects within said spatial display are distinguished from each other by displaying a platter beneath each visual object" (*Figure 9 shows platters G3, G4 and G2 beneath visual objects P2, P1 and Q1; lines 9-13 of column 12: "The CPU 1 further has a third guide displaying function for displaying, in a color different from that of the guide mark G1 around the player P1, a ring-shaped guide mark G4 encircling the position where the adjacent competitor player Q1 stands, thereby inviting user's attention."*).

45. Scallie et al and Nakagawa et al are analogous art because they are from the same field of endeavor: interactive computer graphics. At the time of the invention, it would have been

obvious to a person of ordinary skill in the art to use the platters disclosed by Nakagawa et al in the application layer of Scallie et al. The motivation for doing so would have been to distinguish between three-dimensional visual objects displayed as stated by Nakagawa et al in lines 9-13 of column 12. Therefore, it would have been obvious to combine Nakagawa et al with Scallie et al to obtain the invention specified in claim 27.

46. **Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scallie et al in view of Nakagawa et al and in further view of U.S. Patent No. 5,717,869 to Moran et al (herein referred to as "Moran et al.")**

47. With regard to claim 28, Nakagawa et al shows platters and visual objects, but the system is not cursor or pointer based, and therefore a click-and-drag operation is not shown by the combination of Scallie et al and Nakagawa et al. Moran et al discloses a cursor based system that repositions visual objects within said display through a click-and-drag operation on the visual objects (*lines 63-67 of column 5: "A 'drag and drop' operation is one where the cursor is positioned on an object, the button associated with cursor control device held down, and the object moved or stretched until the button is released (or the movement exceeds some predetermined boundary).*").

48. Scallie et al, Nakagawa et al and Moran et al are analogous art because they are from the same field of endeavor/similar problem solving area: interactive computer graphics. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a click-and-drag operation as disclosed by Moran et al to reposition platters as shown in the Scallie et al and Nakagawa et al combination. The motivation for doing so would have been to enable the user to reposition objects in a cursor based system, which would allow the user to directly and

efficiently manipulate the objects without having to cycle through as the objects in the controller based interface disclosed by Nakagawa et al in the paragraph in column 12, lines 15-34. Therefore, it would have been obvious to combine Moran et al with Scallie et al and Nakagawa et al to obtain the invention specified in claim 28.

49. **Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scallie et al in view of Nakagawa et al and in further view of U.S. Patent No. 6,826,282 to Pachet et al (herein referred to as "Pachetet al.")**

50. With regard to claim 29, Nakagawa et al shows platters and visual objects, but the system is not cursor or pointer based, therefore cursor based selection and icons is not shown by the combination of Scallie et al and Nakagawa et al. Pachet et al discloses "said platter is associated with an icon, selection of said icon setting the visual object to an inactive state" (*lines 49-56 of column 5: "The user can selectively activate or deactivate the predetermined constraints through the interface 2, and thus select those which should be taken into account by the constraint solver 3. For this purpose, there are provided icons 21 on the display 20 (see FIG. 3), on which the user can click by means of the mouse. Each icon 21 corresponds to a constraint."*).

51. Scallie et al, Nakagawa et al and Pachet et al are analogous art because they are from the same field of endeavor/similar problem solving area: interactive computer graphics. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a select and inactivate operation as disclosed by Pachet et al to reposition platters as shown in the Scallie et al and Nakagawa et al combination. The motivation for doing so would have been to enable a user to manually specify which icons should be active at a given time. Therefore, it would have

been obvious to combine Pachet et al with Scallie et al and Nakagawa et al to obtain the invention specified in claim 28.

Conclusion

52. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ravin Balakrishnan, George W. Fitzmaurice, Gordon Kurtenbach "User Interfaces for Volumetric Displays," March 2001, IEEE Computer, v. 34 n. 3, p. 37-45 teach selection and other user interface operations for volumetric displays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Repko whose telephone number is 571-272-8624. The examiner can normally be reached on Monday through Friday 8:30 am -5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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